

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 70202	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/13364	International filing date (day/month/year) 27.11.2002	Priority date (day/month/year) 27.11.2002
International Patent Classification (IPC) or both national classification and IPC C04B41/90		
Applicant FOC FRANKENBURG OIL COMPANY EST. et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 10.06.2004	Date of completion of this report 19.08.2004
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**INTERNATIONAL PRELIMINARY
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International application No. PCT/EP 02/13364

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-6 as originally filed

Claims, Numbers

1-10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: US-A-5 377 741

D2: US-A-3 725 015

2. Novelty (Article 33(2) PCT)

2.1 Present claim 1 is directed to a method for producing a refractory composite material by infiltration of a porous carbide network with two different metals to provide a mixed metallic phase in the pores. In this process the second metal is infiltrated at a temperature exceeding the melting point of the first metal.

2.2 In example 1 of document D1 a silicon carbide preform wrapped with copper is plunged into a pool of molten aluminium matrix alloy at 750°C. After submersion in the pool for one hour, the copper melts and disperses within the matrix metal alloy, and the matrix metal alloy spontaneously infiltrates the preform, thereby forming a metal matrix composite body. There is no disclosure in D1 of using different temperatures for infiltration. The subject-matter of independent claim 1 is thus new compared with D1.

2.3 Document D2 discloses a method of manufacturing a composite material by impregnating a workpiece made from a composition containing a refractory boride and/or carbide and a decomposable carbon containing substance with a molten metal mixture. There is no disclosure in D2 of conducting the infiltration in two steps at different temperatures. The subject-matter of claim 1 is thus also new compared with D2.

3. Inventive step (Article 33(3) PCT)

3.1 The problem to be solved by the present invention is to provide an efficient method for suitable for infiltrating a broad range of metals into porous carbide preforms.

3.2 D1 is directed only to spontaneous infiltration of aluminium (alloys). There is no suggestion to infiltrate also other metals by using two different infiltration temperatures as in present claim 1. The subject-matter of claim 1 is thus involving an inventive step

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compared with D1.

3.2 Concerning D2, the method of present claim 1 provides a non-obvious alternative for producing metal matrix composites with a broad range of possible metal matrix phases.

4. Claims 1-9 are dependent on claim 1 and as such also meet/s the requirements of the PCT with respect to novelty and inventive step.